FOOD PREPARATION 22 - FOOD SCIENCE - (5 credits)

NOTE: The content of the following units in Food Science is required material for those schools wishing to offer Food Preparation 22 for 20 credits. Schools offering Food Preparation 22 for 15 credits will omit this portion of the course outline.

OBJECTIVES OF FOOD SCIENCE

(Chemical composition of food as it is related to body function)

1. To provide theoretical background in foods and nutrition for students entering Food Service 22, and 32, which is not provided in their curriculum.

2. To raise the standards of the food service industry by providing sound knowledge for the better student in food composition and nutrition and its relation to their vocation.

TEXTS - FOOD PREPARATION 22 - FOOD SCIENCE

Dsce Hughs "Introductory Foods" 4th edition, The MacMillan Co. New York, 1962. Chapters 1 - 15 inclusive to be taken in a two-year period.

SUGGESTED TEACHERS'S REFERENCES

1) Fitch and Francis, "Foods and Principles of Cookery" Published by Prentice-Hall, Inc. 1948.

2) Love, "Experimental Cookery" 4th Edition, 1961 Publisher, John Wiley & Sons, Inc.

3) Ruth M. Griswold, "The Experimental Study of Foods" Publisher, Houghton Mifflin Co., Boston, 1962

4) Proudfit and Robinson, "Nutrition & Diet Therapy" 11th edition Publisher, The MacMillan Co., 1955

5) Bogert, "Nutrition and Physical Fitness" 7th edition, 1960 by W. B. Saunders Co.

6) Fleck and Munves "Introduction to Nutrition" The MacMillan Co. 1962 Chapters: 1-17, 22, 23, 24, 27, 30, 31, 34

UNIT I: INTRODUCTION

The Relation of Food to Health

Specific Nutrients in Foods

1. Proteins
2. Carbohydrates
3. Fats
4. Minerals
5. Water
6. Vitamins
    a. Vitamins
    b. Thiamine
    c. Riboflavin
    d. Niacin
    e. Ascorbic acid
    f. Vitamin D

Objectives in the Study of Foods

Retention of Nutritive Value

Palatability

Digestibility

Economy

Preservation of Sanitary Quality Pathogenic Organisms

Intoxication or Food Poisoning

Metallic Contaminants in Foods

Chemical Additives to Foods

Tableware as a Health Hazard

Enzymes in Foods

UNIT II: FRUITS AND FRUIT PREPARATION

Classification of Fruits

Composition and Nutritive Value of Fruits

1. Fruit Juices
2. Dehydrated Juices
3. Frozen Citrus Purees
4. Ripeness and Method of Ripening may influence the Vitamin Content
5. Minerals in Fruits
6. Flavor Constituents of Fruits
7. Cellulose of Fruits
8. Color of Fruits
9. Changes that occur in Fruits During Ripening Ethylene Ripening

Selection of Some Common Fruits

1. Apples
2. Bananas
3. Citrus Fruits
4. Melons
5. Pineapples
6. Storage of Fruits

Dried Fruits

1. Composition and Nutritive Value
2. Method of Drying
3. Sulphuring of Fruits

Prunes

1. Varieties
2. Drying and Packing
3. Size-grading of Prunes
4. The Laxative Value of Prunes

Canned Fruits

1. Vitamin Values may be Somewhat Altered in Canning

The Cooking of Fruits

UNIT III: VEGETABLES AND VEGETABLE PREPARATION

Composition and Nutritive Value of Vegetables

1. Refuse
2. The Leaf Vegetables
3. The Vegetable-Fruits
4. Flowers, Buds, and Stems
5. Bulbs, Roots, and Tubers
6. Seeds

Flavor of Vegetables

Buying and Care of Vegetables for Best Retention of Quality and Nutrients

Vegetable Cookery

1. Why Cook Vegetables?

Changes Occurring in Vegetables During Cooking

1. Changes in Cellulose
2. Changes in Water Content
3. Effect of Cooking upon Flavor
4. Changes in Plant Pigments
5. Other Color Changes in Vegetables
6. Changes in Carbohydrate on Cooking
7. Effect of Cooking on Vegetable Proteins

Methods of Cooking Vegetables

1. How Cooking Losses Occur
2. Vitamin Losses
3. Mechanical Losses
4. Volatile Losses

The Sulphur-Containing Vegetables

UNIT IV: MILK AND MILK PRODUCTS OTHER THAN BUTTER AND ICE CREAM

The composition of Milk

1. The Fat of Milk
2. The Carbohydrate of Milk
3. The Ash of Milk
4. Vitamins

Physical Properties of Milk

1. Color
2. Creaming
3. Reaction of Milk

Kinds of Milk

Milk Processing

1. Pasteurization
2. Homogenization
3. Fortification
4. Concentrated milks
5. Malted milk
6. Frozen whole milk
7. Soft curd milk
8. Sterilization

The Nutritive Significance of Milk

1. Nutritive Value of Processed Milks

Sanitation as Related to Milk Quantity

1. Certified Milk
2. Adulteration of Milk

Home Care of Milk

The Effect of Heat Upon Milk

1. Protein Coagulation
2. The Influence of Acidity on Protein Coagulation
3. The Influence of Salts
4. The Effect of Heating Sugar-Protein Mixtures
5. Effect of Heat Upon Minerals of Milk
6. Scum Formation on Heated Milk
7. Effect of Heat on Flavor of Milk
8. Coalescence of Fat Globules as a Result of Heating
9. The Scorching of Milk
10. Stability of Homogenized Milk to Heating

UNIT IV: CONTINUED

Coagulation of Milk

1. Acid Coagulation
2. Rennin Coagulation
   a. Temperature
   b. Effect of Boiling Milk
   c. Effect of Concentration of Constituents
   d. Effect of Reaction of Milk
   e. Effect of Agitation
3. Coagulation of Milk by Enzymes from Vegetable Sources
4. Coagulation of Milk by Tannins
5. Coagulation of Milk by Salts

Cream

1. The Whipping of Cream
2. Temperature
3. Viscosity
4. Size of Fat Globules
5. Amount of Fat
6. The Type of Beater
7. The Amount of Cream Whipped

Cheese

   a. Composition of Cheese
   b. Types of Cheese
1. Kind of Milk and Milk Fractions Used
2. Temperature
3. The Method of Precipitating the Curd
4. Amount of Pressure Applied
5. Amount of Lactic Formed
6. The Types of Micro-organisms or Enzymes Present
7. Length of Time Ripening
8. Size of Mold
9. Humidity
10. Amount of Salt Added
11. Substances Added

Cheese Storage

Processed Cheese
Variations of Process Cheese

Nutritive Value of Cheese

Digestibility of Cheese

The Cooking of Cheese

UNIT IV: CONTINUED

Meat Cookery

1. General Principles and Methods of Meat Cookery
2. Effect of Temperature in Meat Cookery
3. Cooking Losses
4. Effect of Method of Cooking on Cooking Losses
5. Effect of Grade of Meat on Cooking Losses
6. Shrinkage of Meat Druing Cookery
7. Basting
8. Salting
9. Juiciness
10. Effect of Acid

Changes in Structure of Meat Due to Cooking

1. Lean
2. Fat
3. Bone

Specific Cooking Methods

1. When is Beef Done?
2. Rise in Temperature After Removal from the Oven

Broiling

Braising

Stewing

The Cookery of Glandular Meats and Sundries

Carving Meat

Carving Specific Cuts

1. Beefsteak
2. Tenderloin of Beef
3. Standing Rib Roast
4. Rolled Rib Roast
5. Pot Roasts
6. Ham
7. Loin Roast
8. The Crown Roast
9. Leg of Lamb

Poultry - Definition and Classification

Preparation of Poultry for Market

UNIT IV: CONTINUED

Storage of Poultry

Composition and Nutritive Value of Poultry

The Buying of Poultry

1. Economic Aspects
2. Pink Color in Poultry Meat

Characteristics Which Aid in the Selection of Poultry
Age

The Influence of Feed

The Cooking of Poultry

Fish - Classification

Composition and Nutritive Value

1. Protein
2. Fat
3. Water and Extractivities
4. Carbohydrate
5. Mineral Content
6. Vitamins

The Care of Fish

The Selection of Fish

1. Freshness
2. Grades
3. Frozen Fish

Shellfish

Fish Roe

Cured Fish

Canned Fish

Economy in the Use of Fish

The Cookery and Use of Fish

UNIT V: EGGS AND EGG COOKERY

Composition and Nutritive Value

The Digestibility of Eggs

The Structure and Physical Properties of Eggs

1. Characteristics of Fresh and of Deteriorated Eggs
2. Egg Shells are Porous
3. The Value of Candling as a Method of Determining Quality
4. The Flavor of Eggs
5. The Color of Eggs
6. Reaction of Egg Yolk and Egg White

Buying Eggs

Brown Versus White Eggs

Egg Preservation

1. Cold Storage
2. Freezing and Drying
3. Thermostabilization
4. Home Preservation of Eggs

Culinary and Nutritive Quality of Dried and Frozen Eggs

Egg Cookery

Coagulation of Eggs

1. Concentration and Part of Egg Used
2. Time and Temperature
3. Effect of Rate of Heating
4. Effect of Rate of Stirring
5. Effect of Added Substances

Whipping Eggs

1. Season
2. Thin and Thick Whites
3. Temperature
4. Type of Beater Used
5. Type of Container in Which Eggs are Beaten

Effect of Added Substances

1. Milk
2. Fat
3. Salt
4. Acid
5. Sugar

Beating as a Mechanical Method of Coagulation
Specific Methods of Egg Preparation

1. Soft-Cooked (in the Shell)
2. Hard-Cooked Eggs (in the Shell)

UNIT VI: MEAT AND MEAT COOKERY

Structure of Meat

1. Lean
2. Fatty Tissue
3. Bone

Rigor Mortis

Ripening of Meats

1. Tenderizing of Meats

Composition of Meat

Meat Flavor

Some Characteristic Differences in Composition of Meats From Various Animals

The Nutritive Value of Meats

The Buying of Meats

Government Inspection of Meat

Classification of Meats

1. Beef
2. Veal
3. Lamb and Mutton
4. The "Break Joint"
5. Mutton
6. Pork

Grades and Grade Stamping of Meats

1. Conformation
2. Finish
3. Quality

Other Considerations in the Buying of Meats
Packaged Meats

Cuts of Meat

1. Beef
2. Veal, Lamb, and Pork

Preparation of Meats for Cooking

UNIT VII: FROSTED FOODS

Methods and Temperature of Freezing
Dehydrofreezing

The Freezing Process

Changes in Frozen Foods During Freezing, Storage, and Thawing

1. Physical Changes
   a. Texture
   b. Color and Flavor
2. Chemical Changes
   a. action of chemicals
3. Measures for Prevention of Chemical Changes
   a. Blanching
   b. Chilling
4. Discoloration of Fruits and Vegetables

Nutritive Value of Frozen Foods

Sanitary Quality of Frozen Foods

Advantages and Disadvantages in the Use of Frozen Foods

The Cookery and Use of Frozen Foods

1. Fruits
2. Vegetables
3. Fish
4. Meats
5. Poultry

Frozen Foods Available

1. Fruits
2. Vegetables
3. Fish
4. Poultry
5. Prepared Foods

UNIT VIII: CARBOHYDRATES AND CARBOHYDRATE COOKERY

Sugars and Sugar Cookery

1. Crystalline or Solid Forms of Sugar
2. Sugars, Their Sources and Products of Hydrolysis
3. Sirups, Molasses, and Honey
4. Flavor
5. Solubility
6. Melting Point
7. Moisture Absorption by Sugars
8. Fermentation
9. Acid Hydrolysis
10. Enzyme Hydrolysis
11. Decomposition by Alkalies

Nutritive Value of Sugars

Digestibility of Sugars

Sugar Cookery

The Boiling Point of Liquids

Types of Candies From Boiled Sugar Solutions

Inversion

Value of Inversion in Candymaking

Substitutes for Inversion

Inversion by Enzyme

Carmelization

Crystaline Candies

1. Fondant
2. Solution
3. Concentration
4. Crystillization
5. Growth of Crystals
6. Fudge
7. Caramels
8. Taffy
9. Brittles
10. Fondant Confections
11. Fondant Dripping
12. Fondant Patties
13. Chocolate Dipping
14. Temperatures and Techniques
15. Defects of Dipped Chocolates

UNIT VIII: CONTINUED

Starch

Composition of Starch

Some Physical Properties of Starch

Starch Cookery

Effect of Dry Heat on Starch

Effect of Moist Heat on Starch

Factors Requiring Control in Starch Cookery

Temperature and Time of Heating

Effect of Stirring

Effect of pH of Solution

Effect of Other Ingredients

The Handling of Cooked Starch Solutions

"Weeping" of Starch Solutions

Palatability and Digestibility as tests of Starch Cookery

Combining Starch with Hot Liquid

Starchy Desserts

Cereals and Cereal Cookery

The Composition of Cereals
Nutritive Value
Cereal Grains Most Commonly used in the United States

1. corn
2. rice
3. rye
4. oats
5. barley
6. buckwheat

Cereal Cookery

Technique for Combining Cereal with Water
Temperatures and Time Periods for Cereal Cookery
Rice Cookery
Alimentary Pastes

UNIT IX: BEVERAGES

Coffee
1. Preparation and blending for market
2. Effects of roasting

Composition of Coffee

1. Caffeine
2. Flavor Substances
3. Tannins

Kinds of Coffee

Coffee Substitutes and Adulterants
Powdered Coffee and frozen coffee concentrates

Coffee Staling

What constitutes staleness

Packaging of Coffee

Making the Coffee Beverage

Freshness, grind, and quality of coffee used

Methods

1. Filteration
2. Percolation
3. Boiling or steeping

Factors other than Method which Affect Coffee Beverage

Material from which the pot is made
Water
Temperature
Strength of beverage
Agitation
Cleanliness of pot

Iced Coffee

National Coffee Association's Sponsored Research in the Making of Coffee Beverage

UNIT IX: CONTINUED

Tea

1. Source and classification
2. The tea plant

Types of Tea

1. Green tea
2. Black tea
3. Oolong tea
4. Scented and spiced teas

Composition of Tea

1. Theine or caffeine
2. Tannin
3. Flavor and aroma substances

Making the Tea Beverage

1. Material from which the pot is made
2. Temperature
3. Method
4. Tea-ball method
5. Steeping
6. Iced tea

Nutritive Value of Coffee and Tea

Cocoa and Chocolate

Constituents of Cocoa and Chocolate which Influence the Making of the Beverage

1. Eat
2. Starch
3. Flavor substances
4. Tannin
5. Theobromine and caffeine

Behavior of Chocolate when Exposed to Heat and Damp Atmosphere

Nutritive Value of Cocoa and Chocolate Beverages

UNIT X: FATS AND OILS

Composition and Properties

Common Household Fats

1. Butter
2. Margarine
3. Lard
4. Hydrogenated Fats
5. Oils

Food Value of Fats

Digestibility of Fats

Decomposition of Fats

1. Oxidation changes
2. Reversion changes
3. Prevention of fat spoilage
4. Antioxidants

Decomposition of Fats by Heating Flavor

Frying

Fat absorption
Care of frying fat

Use of Fats for Shortening and For Emulsion

1. Temporary Emulsions
2. Permanent Emulsions

UNIT XI: SALADS AND SALAD DRESSINGS

Uses for Salads

Salad Ingredients and Their Preparation

1. Salad plants
2. Marinating

Salad Dressings

Types
Mayonnaise
Important Factors in the Making of Mayonnaise
Method of Mixing
Effect of adding emulsified mayonnaise
Separation or demulsified mayonnaise
To reform broken mayonnaise

Nutritive Significance of Salads

UNIT XII: GELATIN

Source
Uses for Gelatin
Market forms of Gelatin
Variations in Commercial Gelatin

Nutritive Value of Gelatin

Sanitary Quality of Gelatin

Physical Properties of Gelatin

Hydration or swelling of gelatin
Dissolving of gelatin
Gelation of gelatin solutions
1. Effect of temperature on gelatin
2. Effect of concentration on gelation
3. Effect of acid
4. Effect of salts
5. Effect of sugar
6. Effect of Raw Pineapple

UNIT XII: CONTINUED

Gelatin Foams or Sponges

Other Substances with Properties Similar to Gelatin
Agar-agar

Types of Gelatin Desserts and Salads

UNIT XIII: FREEZING AND FROZEN DESSERTS

Body

Texture
Swell and Overrun

How Various Factors Affect Flavor, Texture, and Body of Ice cream

1. Fat
2. Serum solids
3. Sugar
4. Stabilizer
5. Egg

The Food Value of Frozen Desserts

Sanitary Quality of Frozen Desserts

Types of Frozen Desserts
Desserts Frozen with stirring

The Freezing Process

1. The freezing point of liquids
2. Freezing mixtures
3. Principle of freezing
4. Proportions of salt to ice
5. Construction of the ice-cream freezer
6. Rate of turning the freezer
7. Method of packing the freezer

Ice Creams Frozen Without Stirring

Egg whites
Gelatin
Custard
1. Whipping the cream for refrigerator desserts
2. Effect of sugar in refrigerator creams
3. Time required for freezing refrigerator without stirring
4. Formulas for ice creams frozen without stirring
Chocolate Mousse

UNIT XIV: BATTERS AND DOUGHS

Kinds of Ingredients

Flour

- Method of manufacturing
- Classes of wheat
- Grades of flour

The composition of Various White Wheat Flours as Related to Baking Quality

- Bread flour
- Family flour
- Pastry flour
- Cake flour

Some Physical Characteristics of White Flours

Enrished Flour

Whole Wheat Flour

Flour Mixes

Flours and Meals other than Wheat Flour

- Rye flour
- Barley flour
- Corn meal and corn flour
- Miscellaneous flours

Nutritive Value of Flours and Flour Mixtures

Leavening Agents

- Fermentation Methods
  1. Forms of yeast
  2. Gas production by bacteria
- Nonfermentation Methods
  1. Air
  2. Steam
  3. Gas formation from chemical action
  4. Gas formation by heat
  5. Addition of volitile substances

Methods of Adding Baking Powder and Soda

Substitution of Soda and Sour Milk for Baking Powder and Sweet Milk

UNIT XIV: CONTINUED

Fats

Use of fats as shortening
1. Plasticity as related to shortening power of fat
2. Degree of saturation of fat as related to shortening power
3. concentration of fat

Liquids

Eggs

Sugar

General Methods for Mixing Batters and Doughs
The Muffin Method
The pastry method
The cake method

The Structure of Batters and Doughs

Classification of Batters and Doughs

Doughs
Batters

Specific Flour Mixtures
Quick breads and pastry

Popovers

Baking popovers
Test for "doneness"
Characteristics of good popovers
Causes of failure

Griddle Cakes

Cooking griddle cakes
Waffles
Baking Waffles

Muffins
1. Temperature for baking muffins
2. Preparation of pans for baking

Biscuits

Pastry
1. Temperature of ingredients
2. Technique of mixing
3. Flakiness
4. Technique in the handling and use of pastry
   Rolling pastry
   Methods for preventing soaked crusts

Cream Puffs
Consistency of batter
baking cream puffs
Test for completeness of cooking
Causes of failure

UNIT XIV: CONTINUED

Cakes and Cookies
- Classification of cakes
  - Angel food
- Egg whites
- Flour
- Sugar
- Cream of tartar

Method for Making Angel Cake
- Beating the egg whites
- Preparation of pans for sponge cakes
- Baking temperatures
- Characteristics of good angel cake
- Sponge cake
- Whole-egg method
- Separated egg method I
- Separated egg method II
- Marangue method
- Baking temperatures for sponge cakes
- Butter cakes
- Ingredients used in butter cakes
  - Sugar
  - Eggs
  - Fat
  - Baking powder
  - Flour

Method for Mixing Cake
- The conventional method
- The modified conventional method
- Conventional sponge method
- Muffin method
- Mixer method I
- Mixer method II
- Quick mix method

Proportions and Procedures for Quick-Mix Cakes
- Effects of under and overmanipulation of cake batter
- Effect of manipulation on texture and volume of cake
- Effect of manipulation on shape of cakes
- Effect of manipulation on tenderness of cakes

Chocolate Cakes

Preparation of Pans for Baking Cakes

Baking Temperatures
- Cooling the cake before removal from the pan
- Baking as high altitude

UNIT XIV: CONTINUED

Cookies
- Ingredients for cookies
- Methods of mixing
- Baking pans and their preparation

Bread
- Ingredients of yeast bread
  1. Flour
  2. Liquid
  3. Yeast
  4. Sugar
  5. Salt
  6. Fat

- Proportions of ingredients in bread
  1. Flour
  2. Liquid
  3. Yeast
  4. Sugar
  5. Salt
  6. Fat

Proportions for Yeast Rools

Refrigerator Rolls

Methods for Mixing Bread
- The straight-dough method
- The sponge method
- Consistency of dough
- Kneading
- Fermentation
- Prevention of film formation
- Temperature
- Changes occurring in bread during fermentation
- Optimum amount of fermentation

Baking the Bread
- Preparation of pans
- Baking temperatures
- Effects of baking
- Characteristics of bread of good quality

Bread From Soft Wheat Flours

Staling of Bread

Ropy Bread

UNIT XV: FOOD PRESERVATION

Causes of Food Spoilage

Factors Favoring the Growth of Micro-organisms

Classes of Micro-organisms

- Molds
- Yeast
- Bacteria

General Methods of Food Preservation

- Drying
- Freeze-Drying
- Use of Preservatives
- Preservation by Temperature Control

Canning

- Open-kettle method
- Can-cooked method
- Hazards of open-kettle canning
- Advantages of the can-cooked method
- Heat penetration
- Types of spoilage of canned foods
- Metallic salts
- Hydrogen swells
- Discoloration
- Effect of storage temperatures in keeping quality of canned foods
- Aseptic canning

Home Preservation by Freezing

- Selection of foods for freezing
- Preparation of fruits and vegetables for freezing

Freezing and Storage of Frozen Foods

Preservation by Dehydration

- Preparation of vegetables for drying
- Preparation of fruits for drying
- Procedure for drying fruits and vegetables
- Packaging and storing dried foods

Jelly

- Pectin concentrates
- Tests for Pectin
- The relationship of pectin, acid, and sugar to jelly formation
- The amount of sugar to add
- Sugar concentration in jelly
- When to add sugar to juice
- Beet versus cane sugar for making jelly
- Synersis

UNIT XV: CONTINUED

Procedures for making jelly
Selection of fruit
Making the extraction
Testing for pectin
Proportions of sugar to juice
Cooking the jelly
The "sheeting" test for completeness of cooking
The temperature test for completeness of cooking
Overcooking
Crystal formation in jelly
Storage of jelly

Other Preserved Products Made From Fruits

Preserves
Sun preserves
Marmalade
Conserve
Jam
Fruit butters

Pickling
Brine
The effect of brine
Spoilage of pickles
Methods of adding pickling solutions
Spices and other flavoring substances
Crispness in pickles
Equipment used for pickling

Nutritive value of Preserved Foods
Common storage
Canned foods
Grapefruit and orange juices
Tomato cocktails
Other fruit juices
Sauerkraut juice

Frozen Foods

Dehydrated Fruits and Vegetables
Brined and pickled foods
Jellies, jams, and preserves

Use of Antibiotics

Use of Radiation

UNIT XVI: MEAL PLANNING

Planning Meals from Essential Food Groups

The Economic Aspects of Food Selection
- Energy foods
- Milk and Cheese
- Fruits and vegetables
- Meats, fish, poultry, and eggs

Psychological Aspects of Food Selection
- Food likes and dislikes
- Tradition
- Food fads and fallicies

Other Factors Influencing Food Planning
- Home production as a factor in increased palatability of low-cost diets
- Planning on a day's basis
- Planning for a week or longer
- Availability of foods
- Season
- Managerial aspects

Menus
- Form of writing
- Flavor
- Textures
- Color
- Shape
- Method of Preparation
- Suitability of season
- Suitability to short preparation time
- Meal Patterns
- Planning the buffet meal

FOOD PREPARATION 32 - FOOD SCIENCE (5 credits)

NOTE: The following Food Science material is required content for those schools wishing to offer Food Preparation 32 for 25 credits. Schools offering Food Preparation 32 for 15 or 20 credits will omit this portion of the course outline.

TEXTS - FOOD PREPARATION 32 - FOOD SCIENCE

Fleck and Munves "Introduction to Nutrition", The MacMillan Co., New York, 1962, Chapters 1 - 17, 22, 23, 24, 27, 30, 31, 34

Osee Hughes "Introductory Foods", 4th ed., The MacMillan Co., New York, 1962.

SUGGESTED TEACHER'S REFERENCES

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3) Ruth M. Griswold, "The Experimental Study of Foods" Publisher, Houghton Mifflin Co., Boston, 1962

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6) Fleck and Munves "Introduction to Nutrition" The MacMillan Co. 1962, Chapters: 1 - 17, 22, 23, 24, 27, 30, 31, 34.

NUTRITION

The Meaning of Food

- Influence of food meanings
- Cultural meanings of foods

Nutrition - Yesterday and Today

- History of Nutrition
- Origin of Nutrition standards

Development of Food Guided Status of American Nutrition

World Nutrition

Food Habits

- Other factors influencing food habits
- Impact of crises on food habits
- Modifying food habits
- Research on food habits

The Nutrients

- Techniques of nutrition research
- Functions of nutrients
- Metabolism of nutrients
- Evaluation of nutritional status

Carbohydrates

- Function of carbohydrates
- Chemistry
- Sources of carbohydrates

Fats

- Functions
- Chemistry

Essential Fatty Acids

- Sources
- Consumption

Protein and Amino Acids

- Functions
- Chemistry
- Protein needs

Recommended daily dietary allowances for protein
Amino acid needs
Sources of protein
1. Complete protein
2. Partially incomplete proteins
3. Incomplete proteins
The Effect of cooking on protein
Protein deficiency
Protein in the American diet
Meeting the protein requirement

The Release and Utilization of Nutrients

Physiology of the gastointestinal tract
Ingestion
Digestion
1. Digestion in the mouth
2. Digestion in the stomach
3. Digestion in the small intestine

Energy Metabolism

Energy balance and heat regulation
Measurement of heat production
Energy value of foods
Energy expenditures
Basal metabolism
Specific dynamic action
Muscular of coluntary activity
Growth
Energy needs of the individual
Caloric undernutrition

An Overview of Vitamins
General characteristics of vitamins
Vit mins essential to man
Functions of vitamins
Pharmaceutical vitamin preparations
Antivitamins
Vitamin enrichment

The Fat Soluble Vitamins
Vitamin A
Chemical and physical properties
Functions
Absorption and storage
Recommended daily allowances

Sources of vitamin A
Vitamin D
Chemistry
Functions of vitamin D
Individual needs of vitamin D
Sources of Vitamin D
Vitamin E
Chemical and physical properties
Functions
Human need for vitamin E
Sources
Vitamin K
Chemical properties
Functions
Metabolism and absorption
Nutritive need

Thiamine, Riboflavin, and Niacin

Thiamine
Chemistry
Functions
Deficiency of thiamine
Metabolism and storage of thiamine
Thiamine requirements
The effect of food preparation upon thiamine
Thiamine in the diet
Riboflavin
chemical and physical properties
Functions
Riboflavin deficiency signs and symptoms
Riboflavin requirement
Sources of riboflavin
Riboflavin consumption in the United States
Effect of food preparation on nutritive value
Niacin
Chemical and physical properties
Functions of niacin
Sources of niacin
Niacin deficiencies
Nutritive need for niacin
Food preparation influencing nutritive value

Absorbic Acid and Other Water-Soluble Vitamins

Chemical and physical properties
Functions
Deficiency manifestation
Results of dietary surveys
Requirements and recommendations for ascorbic acid
Sources of vitamin C
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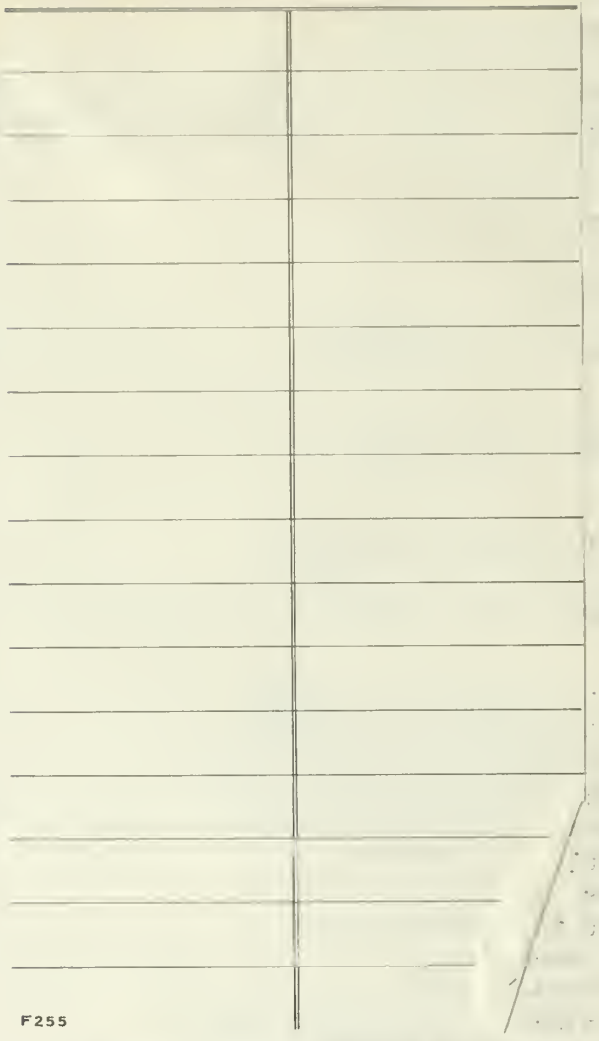

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